

1 1. (amended) An X-ray diffractometer, comprising:
2 a sample stage for mounting a sample, the sample stage being rotatable about an axis;
3 a double pinhole collimator for directing X-ray radiation to a sample on the sample stage;
4 *an* a detector for detecting X-rays diffracted by the sample; and
5 *cont* an analyser crystal arranged between the sample stage and the detector to direct X-rays
6 diffracted by the sample onto the detector,
7 wherein the analyser crystal and detector are rotatable about an axis that is coaxial with the
8 axis of rotation of the sample stage.

1 2. (unchanged) An X-ray diffractometer according to claim 1 wherein the size of the pinhole of the
2 double pinhole collimator nearest the sample stage is adjustable for providing an X-ray spot on the
3 sample of variable size.

1 3. (unchanged) An X-ray diffractometer according to claim 1 wherein a slit is arranged between the
2 sample stage and the detector.

1 4. (unchanged) An X-ray diffractometer according to claim 3 wherein the slit is arranged in front
2 of the detector.

1 5. (unchanged) An X-ray diffractometer according to claim 1 and further comprising a drive for
2 rotating the sample stage and the detector and analyser crystal with a ratio of rotation angles of
3 substantially 1:2.

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1 6. (amended) A method of X-ray diffractometry, comprising the steps of:
2 directing X-rays through a double pinhole collimator onto a sample to be measured;
3 diffracting the X-rays diffracted by the sample with an analyser crystal onto a detector;
4 rotating the sample and rotating the analyser crystal and the detector about coaxial axes; and
5 measuring the diffracted X-ray intensity as a function of the angle of rotation of the sample
6 and the angle of rotation of the analyser crystal and detector.

1 7. (unchanged) A method of X-ray diffractometry according to claim 6 and further including
2 varying the size of at least one pinhole in the double pinhole collimator.

1 8. (amended) A method of X-ray diffractometry according to claim 6 and further comprising the
2 steps of:

3 mounting the sample on a sample stage;

4 rotating the analyser crystal and detector to a predetermined position;

5 rotating the sample whilst keeping the analyser crystal and detector in the predetermined
6 position and measuring the X-rays reaching the detector as a function of angle of sample rotation;

7 determining the sample rotation angle at which the measure X-rays are at a peak and rotating
8 the sample to that angle; and

9 rotating the sample and the analyser crystal and detector about coaxial axes and measuring
10 the diffracted X-ray intensity as a function of rotation angle.

1 9. (amended) A method of X-ray diffractometry according to claim 6 and further comprising the
2 step of:

3 rotating the sample and the analyser crystal and detector with rotation speeds substantially
4 in a 1:2 ratio.
